

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Agricultural and Plantation Engineering



Study Programme: Bachelor of Industrial Studies Honours in Agriculture
Name of the Examination: Final Examination
Course Code and Title: AGI5364 Farm Power and Machinery
Academic Year : 2025/2026
Date: 16.02.2026
Time: 1.30 - 4.30 hrs
Duration: 3 hours

General Instructions

1. Read all instructions carefully before answering the questions.
2. Answers should be in clear handwriting.
3. Do not use red colour pen.
4. This question paper consists of **two (02) sections**.

Section 1

- Consists of 15 questions in **four (5) pages**.
- All questions carry equal marks
- Answer all questions.
- Write answers only in the space provided.
- Please do not remove the question paper from the examination hall.
- You may spend **one (01) hour** to answer this section.

Section 11

- Contains **six (06) questions** in **two (02) pages**.
- Answer any **four (04) questions**.
- You may spend **two (02) hours** to answer this section.
- All questions carry equal marks.
- Answer for each question should commence from a new page.

Index number

SECTION 1

Answer all questions. Use the space given under each question. You may spend 01 hour.

1. Define the term "**Internal Combustion Engine**".

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2. List **three (03)** types of belts used in power transmission.

I.

II.

III.

3. List **five (05)** main components of a tractor.

I.

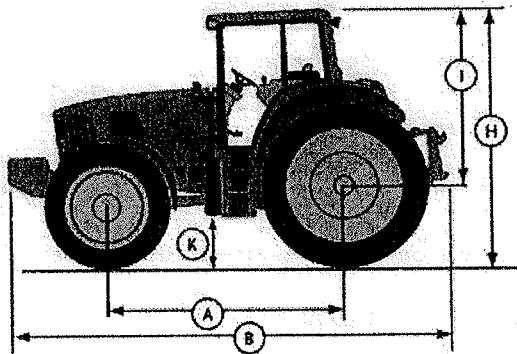
II.

III.

IV.

V.

4. The illustration below shows the dimensions of an agricultural tractor, indicated by upper case letter. Identify and label the dimensions represented by A, B, H, I and K.



A = ...

B = ...

H = ...

I = ...

K = ...

5. List **three (03)** gear types used in power transmission engine.

I.

II.

III.

6. List **three (03)** agricultural activities which may cause abuse

I.

II.

III.

7. List **three (03)** applications of wind power in agriculture.

I.

II.

III.

8. Briefly explain the term **“Geothermal Energy”**

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9. List **five (05)** advantages and disadvantages of using solar power as an energy source in agriculture in Sri Lanka.

Advantages	Disadvantages

10. Briefly explain why biomass energy is considered as renewable in nature.

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11. Define the term “**Farm Operations**” relevant to agricultural production

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12. List **five (05)** components of a seed drill.

- I.
- II.
- III.
- IV.
- V.

13. List **three (03)** forces acting upon a plough.

I.

II.

III.

14. List **three (03)** types of impellers used in water pumps.

I.

II.

III.

15. Briefly explain the function of a cultivator.

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End of section 1

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SECTION 11

1.

- a. Describe the special features of an "Agricultural Tractor". (05 Marks)
- b. i. Define the term "Compression Ratio". (05 Marks)
- ii. An engine has a stroke (swept) volume of 750 cm^3 and the combustion chamber volume of 104 cm^3 . Find the compression ratio? (05 Marks)
- c. Name and discuss functions of a gear box in mechanical transmission system. (10 Marks)

2.

- a. Briefly discuss the functions of a cooling system. (05 Marks)
- b. Briefly explain **two (02)** Properties of an anti-freeze used in engine cooling systems (08 Marks)
- c. Draw a labeled cross section of a carburetor and describe its working principle. (12 Marks)

3.

- a. Mention **two (02)** depreciation methods of farm machinery equipment. (05 Marks)
- b. Briefly discuss the operation and maintenance cost of farm machinery. (10 Marks)
- c. Discuss the role and importance of cost recording in farm machinery management. (10 Marks)

4.
 - a. Mention the reasons why fossil fuels and nuclear power are considered non-renewable energy sources. (05 Marks)
 - b. Briefly explain two (02) benefits of using biomass as a source of energy. (08 Marks)
 - c. Explain two (02) advantages and two (02) disadvantages of hydro power. (12 Marks)
5.
 - a. Briefly discuss mechanization of harvesting (05 Marks)
 - b. Briefly explain the working principle of a paddy combine harvester. (10 Marks)
 - c. Explain the common factors to be considered when selecting manual or machine harvesting for paddy cultivation, with suitable examples. (10 Marks)
6. Write the short notes on each of the following topics.
 - a. Calibration of a knapsack sprayer. (05 Marks)
 - b. Mechanical weeding is an environmentally friendly method. (05 Marks)
 - c. Adjustment of the disc plough. (05 Marks)
 - d. Objectives of the secondary tillage. (05 Marks)
 - e. Working principle of a centrifugal water pump. (05 Marks)